UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/067,208	04/28/98	HOWARD W	P-7860

IM62/0802

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EXAMINER	
CREPEAU, J	
ART UNIT	**PAPER NUMBER**
1745	7

DATE MAILED: 08/02/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/067,208	Applicant(s) Howard
	Examiner Jonathan Crepeau	Group Art Unit 1745

☒ Responsive to communication(s) filed on *Jul 10, 2000* .

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-18 and 27-90* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-18 and 27-90* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Response to Amendment

1. This Office action addresses claims 1-18 and 27-90, after entry of the amendment filed on July 10, 2000. Claims 27 and 73-90 are rejected under 35 USC 112, second paragraph. Claims 1-18 and 28-90 are all newly rejected over prior art that was not previously on the record. Therefore, finality is withdrawn, prosecution is reopened, and this action is made non-final.

Claim Rejections - 35 USC § 112

2. Claims 27 and 73-90 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 27 is dependent on claim 19, which has been cancelled (it appears that claim 27 was meant to be cancelled, but was not).

Claim 73 recites "the first height", "the second height", and "the first length" in lines 14, 15, and 16. These should be changed to "the second height", "the first height", and "the second length", respectively. Similarly, in claim 82, line 14, "the first length" should be changed to "the second length". Correction is required.

Claim Rejections - 35 USC § 102

3. Claims 1, 3-8, 10, 12-17, 37, and 39-44 are rejected under 35 U.S.C. 102(b) as being anticipated by Takeuchi et al (U.S. Pat. 5,549,717).

In Figure 4 and in column 3, line 36-column 4, line 55, Takeuchi et al. teach an electrode assembly having two substantially straight sides and comprising spirally-wound anode and cathode assemblies. The anode assembly comprises a nickel current collector (68) and lithium strips (64, 66). A tab (72) extends from the edge of current collector 68. Current collector 68 has a smaller length and width than the length and width of lithium strip 66 (see col. 4, line 39). The cathode assembly comprises silver vanadium oxide active material (47) which is embedded into a titanium current collector (54). The current collector 54 comprises tabs (48, 50) extending from the edges. Takeuchi et al. incorporate by reference the disclosure of Keister et al. (U.S. Pat. 4,830,940), which discloses that the cathode can comprise a mixture of silver vanadium oxide, PTFE binder, and graphite powder conductivity enhancer (col. 8, lines 37-42 of Keister et al).

Thus, the instant claims are anticipated.

Claim Rejections - 35 USC § 103

4. Claims 2, 9, 11, 18, 38, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al.

The reference is applied to claims 1, 3-8, 10, 12-17, 37, and 39-44 for the reasons stated in paragraph 3 above.

The reference does not explicitly teach the exact length and height of the anode current collector as a percentage of the length and height of the lithium strip, or that the separator covers the anode assembly and provides a seal therearound and an opening through which the tab(s) project.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the length and height of the current collector are parameters which may be optimized by the artisan to achieve a particular result, i.e., the utilization rate of active material, current density, etc. It has been held that when the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (*In re Aller, Lacey, and Hall*, 105 USPQ 233).

Additionally, although the reference does not explicitly teach that the separator covers the anode assembly and provides a seal therearound and an opening through which the tab(s) project, this limitation would be rendered obvious by the disclosure of Takeuchi et al. In column 5, lines 2-28, the reference twice discloses that the separator may be folded around the anode assembly in a manner similar to the cathode assembly. In column 4, line 26, the reference discloses that the separator surrounding the cathode assembly is sealed on all three open sides so that only the tabs project. Therefore, the artisan could easily see that a pouch-type separator surrounding the anode is disclosed by the reference, although not explicitly.

5. Claims 28-30, 82-84, and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goebel et al (U.S. Pat. 4,565,752).

In Figures 1-6, Goebel et al. teach an electrode assembly comprising spirally-wound anode and cathode assemblies. The anode assembly comprises a nickel current collector (29) and adherent lithium strips (30) (see col. 3, lines 16-22). A tab (32) extends from the edge of the current collector. The cathode assembly comprises carbon black catalyst (20) which is layered on a nickel or stainless steel current collector (23). From Figs. 1 and 2, it is apparent that the anode current collector 29 has a smaller length and width than the length and width of the cathode current collector 23.

The reference does not explicitly teach that the electrode assembly has "two substantially straight sides", that the cathode current collector has a tab extending from its edge, or the exact length and height of the anode current collector as a percentage of the length and height of the cathode current collector.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the cell of Goebel could be said to comprise two "substantially straight" sides. The term "substantially" indicates that the sides do not have to be *completely* straight, and thus, the cylindrical cell of the reference is considered to meet this limitation. Additionally, spirally-wound cells with flat sides are known in the art, as exemplified by several references of record. The outer shape of the cell may be manipulated as desired by the artisan and is therefore not considered to distinguish over the reference.

Additionally, regarding the limitations in the instant claims which recite the length and height of the anode current collector as a percentage of the length and height of the cathode current collector, these lengths and widths are optimizable parameters for the reasons explained in paragraph 4 above, and are thus rendered obvious to the skilled artisan.

Regarding the lack of disclosure of a "tab" on the cathode current collector, the artisan would realize that the oversized nature of the cathode current collector allows it to function as a tab. Therefore, since the current collector of the reference is functionally equivalent to a tab, the recitation of a tab in the instant claims is not considered to distinguish over the reference.

6. Claims 31-35, 85-87, and 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goebel et al. as applied to claims 28-30, 82-84, and 88 above, and further in view of Crespi et al (U.S. Pat. 5,458,997).

Goebel et al. do not explicitly teach that the cathode current collector is made of titanium, or that the cathode mixture comprises silver vanadium oxide, PTFE binder, and a carbon conductivity enhancer.

Crespi et al teach a spirally wound electrode assembly in Figure 1. At the bottom of column 2 and the top of column 3, a cathode assembly comprising a silver vanadium oxide, PTFE, and carbon black mixture pressed onto a titanium current collector is disclosed.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the patent of Crespi et al. shows that this specific combination of cathode components is known in the art and is used in cells similar in structure to Goebel et al. Throughout their disclosure, Crespi et al. indicate that their cathode materials result in cells that are capable of delivering high current pulses and which are useful in cardiac defibrillator applications. Additionally, the cathode materials show improved reliability in long-term operation. Therefore, the artisan would have sufficient motivation to use the cathode materials of Crespi et al. in the battery of Goebel et al.

7. Claims 36 and 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goebel et al. as applied to claims 28-30, 82-84, and 88 above, and further in view of Kelm (U.S. Pat. 5,486,215).

Goebel et al. do not explicitly teach that the separator covers the anode assembly and provides a seal therearound and an opening through which the tab(s) project.

Kelm teaches this configuration in column 4, lines 60-66.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the patent of Kelm shows that these types of separators are known in the art and are used in cells similar in structure to Goebel et al. Thus, the artisan would see from Kelm that this type of separator would be an advantageous modification of

the battery of Goebel et al. because it simultaneously provides coverage of both sides and all edges of the anode, thereby providing increased dendrite protection and better sealing of the anode assembly in general.

8. Claims 46-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. as applied to claims 1-18 and 37-45 above, and further in view of Goebel et al.

Takeuchi et al. do not explicitly teach that the cathode current collector is longer and wider than the anode current collector.

Goebel et al. disclose a spirally-wound cell in Figs. 1 and 2 comprising a cathode current collector (23) that is both longer and wider than the anode current collector (29).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to incorporate the configuration of Goebel et al. into the cell of Takeuchi et al. In Figure 2 and in column 3, lines 7-9, Takeuchi disclose a cell casing which functions as a terminal (i.e., the cell is either "case-positive" or "case-negative"). Upon inspection of the Goebel et al. reference, it is apparent that the oversized cathode current collector is designed to facilitate the construction of the cell as a case-positive cell (i.e., the entire outside of the cell except for the negative terminal acts as the positive terminal). In column 1, lines 41-50, Goebel et al. state that their design is economical while being mechanically and electrically sound, as compared to other designs to hold a battery

stack in position. Therefore, the artisan would be motivated to incorporate the oversized cathode current collector configuration into the cell of Takeuchi et al. in hopes of creating a more mechanically stable and economically viable battery.

Additionally, regarding the limitations in the instant claims which recite the length and height of the anode current collector as a percentage of the length and height of the cathode current collector, these lengths and widths are optimizable parameters for the reasons explained in paragraph 4 above, and are thus rendered obvious to the skilled artisan.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (703) 305-0051. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Maria Nuzzolillo, can be reached at (703) 305-3776 from Monday-Thursday. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900.

Documents may be faxed to (703) 306-3429. The official fax number for documents of extreme importance is (703) 305-3599 (it will take longer to receive documents faxed to this number; therefore the first number is preferred).

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Maria Nuzzolillo
Supervisory Patent Examiner
Technology Center 1700

JSC

July 30, 2000